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**McClaren
Hart**

**WORK PLAN
SUPPLEMENTAL PHASE II SITE INVESTIGATION**

300094

Prepared by:

McLaren/Hart
8500 Brooktree Road
Suite 300
Wexford, Pennsylvania 15090

April 8, 1996

**WORK PLAN
SUPPLEMENTAL PHASE II SITE INVESTIGATION**

300095

Work Plan Supplemental Phase II Site Investigation

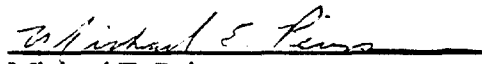
McLaren/Hart Project No. 09.0803591.001.001

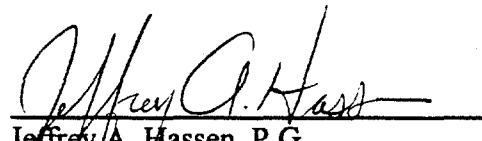
PPG Pulverizing Services Facility Moorestown, New Jersey

April 5, 1996

Prepared for: **PPG Industries, Inc.**
4325 Rosanna Drive
Coatings and Resins
Allison Park, PA 15101-2009

Prepared by: **McLaren/Hart Environmental Engineering Corporation**
8500 Brooktree Road, Suite 300
Wexford, PA 15090


Michael E. Peirson
Associate Geoscientist


Jeffrey A. Hassen, P.G.
Project Manager

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1.0 INTRODUCTION

This document has been prepared by McLaren/Hart Environmental Engineering Corporation (McLaren/Hart) under contract to PPG Industries, Inc. (PPG), to perform a Supplemental Phase II Site Investigation of the Pulverizing Services Site located in Moorestown, New Jersey. This investigation is intended to fulfill the U.S. Environmental Protection Agency (U.S. EPA) Region II request for supplemental information to augment the findings of the Phase II Site Investigation (McLaren/Hart, November 1995). The Phase II Investigation was performed in accordance with the U.S. EPA Administrative Order of Consent (AOC) dated March 31, 1989, issued to PPG by U.S. EPA (II-CERCLA-80109). The methods and procedures specified in this Work Plan are consistent with those presented in the Phase II Investigation Work Plan (McLaren/Hart; January, 1994), as appropriate.

1.1 SITE DESCRIPTION AND HISTORY

The Pulverizing Services Site is located in an Industrial Park at 332 New Albany Road in Moorestown, Burlington County, New Jersey (Figure 1). Based upon tax maps obtained from the Moorestown Township Assessors office, the site is comprised of three parcels totaling approximately 24 acres. Two of the parcels (depicted as Area A and Area C on Figure 2) are located on the northwest side of New Albany Road; the third parcel (Area B) lies almost directly across from areas A and C on the southeast side of New Albany Road.

The Pulverizing Services Site is an inactive facility which formulated pesticides. The plant commenced operations circa 1935. The plant was originally operated by International Pulverizing Company. In 1946, International Pulverizing Company was sold to the Micronizer Company, a subsidiary of Freeport Sulfur Company now Freeport McMoran. PPG purchased this firm in 1948. PPG operated the plant until 1963 when it was sold to Pulverizing Services, Inc. Pulverizing Services, Inc. operated on the site until January 1979 when it ceased operations due to labor relations problems.

Industrial activities involving pesticide grinding, micronizing, and blending first occurred at the site in 1935. Initially, inorganic pesticides such as lead arsenate, calcium arsenate, sulfur, and

tetrasodiumpyrophosphate predominated. In later years, organic pesticides such as dichlorodiphenyltrichloroethane (DDT), dichlorodiphenyldichloroethane (DDD), dichlorodiphenyldichloroethylene (DDE), aldrin, malathion, dieldrin, lindane, rotenone, and n-methyl carbamates (sevin, also referred to as Carbaryl), were formulated. The active pesticide ingredients were not actually manufactured at the site. Rather, the active ingredients were brought to the site, then ground, blended, and packaged for distribution under the labels of various companies. During the 1950s and early 1960s, under PPG's ownership, waste was reported to have been disposed behind the main production buildings in several trenches (U.S. EPA, 1988).

1.2 PREVIOUS INVESTIGATIVE ACTIVITIES

New Jersey DEP Investigations

The New Jersey Department of Environmental Protection (NJDEP) began investigating the facility in 1985. The U.S. EPA became involved in 1987 and conducted several investigations through 1988. These investigations revealed the presence of various pesticides, organic compounds, and inorganic compounds including: DDT, DDD, DDE, alpha BHC, lindane, methoxychlor, heptachlor, arsenic, and sulfur. The occurrence of these substances was reported to be widespread in Area A and were also present in certain portions of Areas C and B. Pesticide concentrations were reported at concentrations as great as 110 mg/kg in Areas C and B and as high as 2,400 mg/kg in Area A. These investigations identified a potential off-site migration pathway with the drainage ditch along the northwest side of the site. These investigations also revealed the presence of several disposal trenches to the northwest of Building 29 in Area A.

Phase I Site Investigation

PPG contracted Paul C. Rizzo Associates, Inc. to conduct a Phase I Site Investigation in accordance with a U.S. EPA approved Phase I Site Operation Plan. The Phase I Investigation involved the installation of 20 soil borings, installation of six monitoring wells, collection of soil and groundwater samples, and performance of a geophysical survey. The intent of the investigation was to provide an initial characterization of the extent of impacted soil and groundwater and to further refine the understanding of the constituents of concern.

The Phase I Site Investigation Report (SIR) was submitted to the U.S. EPA in August 1993. Significant findings of the SIR are summarized below.

- ▶ Results of the geophysical surveys indicated that there were two or three areas of buried metal (possibly drums), the most significant of which was the area near the perimeter fence west of Building 29.
- ▶ Results of the soil sampling activities indicated several constituents of concern in both the surface and subsurface soils of various areas of the site. These constituents included: DDD, DDE, DDT, aldrin, dieldrin, sevin, and alpha, beta, and gamma BHC.
- ▶ Analytical results of the sediment sample from the ditch indicated the presence of DDD and malathion. In addition to these pesticides, phenol, benzene, chlorobenzene, ethylbenzene, xylenes, and tetrachloroethane were detected at low levels.
- ▶ Results of the groundwater sampling revealed DDT, sevin, malathion, and alpha and gamma BHC in well MW-2; DDT, dieldrin, BHC compounds, and endrin ketone in MW-3; dieldrin and gamma BHC in MW-4; sevin, and BHC compounds in MW-5; and sevin and BHC compounds in MW-6. In addition to these pesticides, organic compounds including xylenes, naphthalene, and 2-methyl-naphthalene were detected in MW-2. 4-methyl-2-pentanone was detected in MW-4. Xylenes, nitrobenzene, 1-methyl-ethyl benzene, carbon disulfide, and diethyl phthalate were detected in MW-5. Tetrachloroethane, 4-methyl-2-pentanone, and endrin ketone were detected in MW-6.

Phase II Site Investigation

PPG contracted McLaren/Hart to complete a Phase II Site Investigation of the site to provide the necessary information for evaluating potential risks to human health and the environment; to support the development of risk-based Preliminary Goals (PRGs); and to support preparation of a Focused Feasibility Study (FFS). The primary objectives of the Phase II Investigation were to determine the potential nature and extent of site-related constituents in the soil, sediments, groundwater, and surface

water for site Areas A, B, and C; determine the physical characteristics of the underlying aquifer system; and, determine the location of the disposal trenches and the nature of the fill material.

Sample results from the Phase II Investigation were compared to applicable screening criteria. This comparison was performed to provide a conservative assessment of the extent of each media impacted by site related constituents. The screening criteria consisted of:

- ▶ The Site Preliminary Remediation Goals (PRGs) for soil (from the Draft U.S. EPA Risk Assessment);
- ▶ New Jersey Soil Cleanup Criteria (NJSCC);
- ▶ U.S. EPA Region III Risk -Based Concentrations (RBCs);
- ▶ Federal and State MCLs for groundwater;
- ▶ U.S. EPA Region II TWCs;
- ▶ U.S. EPA Region III Risk -Based Concentrations (RBCs); and,
- ▶ The New Jersey Surface Water Quality Standards.

The findings of the Phase II Investigation and a summary of the site related constituents which were detected above the screening criteria for each of the respective media, are listed below.

- ▶ Surface soils at the site consist of either fill materials or natural silty/clayey sand; surficial materials are underlain by a continuous clay unit approximately 110 feet thick; fill materials are comprised of sandy/gravelly or powdery material; most of the site fill areas are less than two feet deep; in the former disposal trench area, however, the fill materials extended to approximately nine feet in depth; in all instances, fill materials were observed to be underlain by natural subsurface materials.

- ▶ Soil constituents were reported to be consistent with the findings of the previous investigations. Significant attenuation of these constituents were reported between surficial and subsurface materials. Site-related constituents were reported to be limited primarily to Area A (both surface and subsurface soil), and to a lesser extent Area B. Area C surface and subsurface soil were reportedly not impacted by site-related constituents. Off-site areas east and west of the site revealed the presence of site-related constituents in surficial materials in localized areas east of Area A and west of Area A.
- ▶ Site related constituents present in the site soil in excess of the soil screening criteria included DDT, DDD, DDE, alpha-BHC, gamma-BHC (Lindane), aldrin, dieldrin, hexachlorobenzene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[a]anthracene, arsenic, and lead. Site related constituents present in the off site soil in excess of the soil screening criteria included DDT, dieldrin, and cadmium.
- ▶ Results of the sediment sampling revealed the presence of site related constituents including DDT, DDE, and arsenic in excess of their respective screening criteria for samples collected from the drainage ditch to the west of Area A and Area C; dieldrin and arsenic in the drainage ditch along the east and south sides of Area B; DDT, dieldrin, hexachlorobenzene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, indeno[1,2,3-cd]pyrene, PCNB, arsenic, and lead in the sediment sample collected from the Building 5 Trench; and, arsenic from the sediment sample collected from the storm sewer culvert located on the north side of New Albany Road and adjacent to the site. The Building 5 Trench sample was reported to have the highest concentrations of site related constituents. Of the sediment samples collected from the drainage ditches, it was reported that the samples collected from the discharge outfalls had higher concentrations than the downstream samples.
- ▶ The shallow unconfined aquifer is continuous across the site. The groundwater surface was slightly mounded near the fill areas due in part to the higher hydraulic conductivity of the fill material. Two separate flow paths were reported to originate near the former disposal trenches; one to the northwest and one to the southwest.

- ▶ Groundwater samples collected from the shallow unconfined aquifer revealed the presence DDT, DDD, alpha-BHC, beta-BHC, gamma-BHC (Lindane), 1,4-dichlorobenzene, dieldrin, chloroform, tetrachloroethene, chlorobenzene, benzene, xylenes, carbon tetrachloride, and filtered and unfiltered arsenic, lead, cadmium, and chromium. These constituents appeared to be limited to Area A with only apparent migration to Areas B and C. The potential for off-site migration exists along the western property boundary, but that based on the extremely low groundwater velocities, this migration is not expected to be significant. It was also concluded that the low vertical hydraulic conductivities limits the vertical groundwater migration from the source areas. This conclusion was supported by the lack of site-related constituents in the deep sand and gravel aquifer.

- ▶ Surface water sampling revealed the presence of DDT, DDD, DDE, alpha-BHC, beta-BHC, gamma-BHC (Lindane), delta-BHC, dieldrin, heptachlor, methoxychlor, malathion, endrin, DEHP, PCE, benzene, chrysene, benzo[a]pyrene, benzo[b]fluoranthene, benzo(k)fluoranthene, benzo[a]anthracene, indeno(1,2,3-cd)pyrene, 1-4 Dichlorobenzene, arsenic, lead, cadmium, and chromium. Since the site-related constituents are relatively immobile and adsorb to fine soil particles, it was concluded that the detection of these constituents was the result of entrained sediment in the surface water samples.

The final Phase II Investigation report was submitted to the U.S. EPA on November 10, 1995. This report incorporated many of the revisions suggested by the U.S. EPA in their November 10, 1995 comment letter on the draft report submitted May 1, 1995. PPG and the U.S. EPA agreed that several U.S. EPA comments would be addressed through a Supplemental Phase II Investigation. The objectives of the Supplemental Investigation are summarized below.

- ▶ Evaluate the surface water drainage pathways and the potential migration of site-related constituents across the site including the Trench 5 drain.

- ▶ Identify the location of off-site commercial and residential wells within a one-mile radius of the site.

- ▶ Perform a qualitative habitat survey and delineate the extent of any jurisdictional wetlands on the site.
- ▶ Identify potential historic cultural resource features on the site.
- ▶ Conduct a fate and transport analysis of site related groundwater constituents which exceed Federal or NJDEP Maximum Contaminant Levels (MCLs), U.S. EPA Region II Tap Water Concentrations, or Risk-Based Concentrations.

The methodologies that will be employed to address these objectives are presented in the Scope of Work (Section 2.0).

2.0 SCOPE OF WORK

McLaren/Hart proposes to perform or subcontract the following tasks to fulfill the objectives of the Supplemental Phase II Investigation.

2.1 TASK I - SURFACE WATER DRAINAGE EVALUATION

McLaren/Hart will complete a surface water drainage evaluation to determine the fate and transport of site surface water and sediments. McLaren/Hart's evaluation will focus on the drainage ditches along the north side of Areas A and C, the Building 5 Trench, and storm water discharge near New Albany Road.

McLaren/Hart will address the above requests by 1) conducting a review of readily available maps of the site area to determine the probable drainage pathways and discharge points for surface water; 2) interviewing appropriate Township and State engineers to obtain construction details associated with the recently updated (1991) storm sewer system along New Albany Road; and, 3) conducting a site reconnaissance to inspect all potential site surface water drainage pathways (storm water culverts, drainage ditches, surface depressions, surface water bodies, *etc.*) to confirm the ultimate discharge point(s) of surface water.

The results of this evaluation will be summarized in the Supplemental Phase II Investigation report. A 1" = 250' scale map will be prepared which depicts the surface water drainage flow direction, and surface water drainage features.

2.2 TASK II - WELL SURVEY

McLaren/Hart will research the potential location of public supply wells within a one-mile radius of the site and private supply wells within a one-quarter mile radius of the site. This task will be completed by reviewing maps and well records provided by the NJDEP, Water Supply Element, Bureau of Water Allocation (Bureau) and by reviewing water supply records provided by the Moorestown Township Water Authority (Authority).

Public supply wells will be located by identifying 100,000 gallon per day or greater groundwater withdraw points as provided on a 1:63,360 scale map and reviewing drillers logs, both provided by the Bureau. Private supply wells will be located by reviewing Authority water supply records and Bureau drillers logs. McLaren/Hart will verify the potential location of private wells through a mailing and/or telephone interviews.

The results of the well survey will be summarized in a Supplemental Phase II Investigation report. In addition, a one inch to 2,000 feet scale map will be prepared which depicts the location of wells identified during the well survey. Available information on the age, pump capacity, and water bearing formation will be tabulated on an attachment to the map.

2.3 TASK III - QUALITATIVE HABITAT SURVEY AND WETLANDS DELINEATION

McLaren/Hart will perform a qualitative habitat survey and wetlands delineation at the site. The qualitative habitat survey will consist of identifying upland and wetland habitats at the subject site. The governing regulation for freshwater wetlands in the state is the New Jersey Freshwater Wetlands Protection Act (N.J.A.C. 7:7A) (the "Act"). The Act requires that freshwater wetlands be identified or delineated in New Jersey using the three parameter approach as described in the Federal Manual for Identifying and Delineating Wetlands (1989) ("1989 Manual"). Such an approach dictates that

areas meeting the defined criteria of soils, hydrology, and vegetation will be designated as jurisdictional wetlands. The 1989 Manual requires that each of the three parameters be present, except under certain disturbed conditions, for an area to be considered a wetland.

Hand-augered soil borings will be completed to evaluate the hydric nature of the soil below the "A" horizon (generally between 10 and 24 inches below grade). This analysis will be determined by color changes that occur as a result of chemical reduction of some soil components during extended periods of saturation or inundation. Munsell Soil Color Charts will be used to provide valid and reproducible color designations. Other hydric soil characteristics such as high organic content, gleying, histic epipedons, sulfidic materials, aquic or peraquic moisture regime, and iron or manganese concretions will also be evaluated, if present. The indicators described above cannot be applied to sandy soils due to their unique nature. If sandy soils are present, the hydric nature of the soils will be based upon the presence of high organic content in the surface horizon, vertical organic streaking in the lower horizons or the presence of wet spodosols (deep organic layers at the typical water table).

The hydrology characteristics of the subject area will be investigated during the completion of the above referenced borings. Hydrology is present when inundation or saturation of the soil within 6 to 18 inches of the surface occurs for a minimum of 7 consecutive days during the growing season. During the periods when inundation or saturation is not present, there are a number of characteristics (e.g., hummocking, aerial roots, stained leaves, etc.) that can be used to determine whether hydrology exists.

To determine whether a predominance of hydrophytic vegetation is present at the site, a community prevalence index value will be developed for the dominant vegetative species in the vicinity of each soil boring. Hydrophytic vegetation is present when a predominance of the vegetation is either obligate, facultative wet, or facultative. The U.S. Fish and Wildlife Service

has compiled data on the habitat characteristics of plants of the United States. This list categorizes plant species by their frequency of occurrence in a wetland habitat, and these categories are as follows:

- 1) Obligate Wetland Plants (OBL) are those species that occur almost exclusively in wetlands (>99% of the time),
- 2) Facultative Wetland Plants (FACW) are those species that usually occur in wetlands (67 - 99%),
- 3) Facultative Plants (FAC) are those species that are equally likely to occur in wetland or nonwetland (34 - 66%),
- 4) Facultative Upland Plants (FACU) are those species that usually occur in nonwetlands (67 - 99%),
- 5) Upland Plants (UPL) are those species that occur almost exclusively in uplands (>99%).

Each species is given a value based upon their habitat classification (*i.e.*, OBL=1.0, FACW=2.0, FAC=3.0, FACU=4.0, UPL=5.0). If the sum of the values for all of the dominant species is less than 3.0, then the predominant vegetation is indicative of a wetlands.

A wetland delineation involves the determination of the boundary line between the areas in which the three hydric parameters are present and where they are not. Using perceived changes in elevation and vegetation as a guide, representative observation points will be selected along the

border of the wetland areas. At each of the observation points, soil borings will be made to determine soil and hydrologic conditions. Additionally, observations of floral species and surface hydrologic conditions will be made. Observations will be made on both the wetland and upland side of the perceived change in topography. Based on professional judgement, the boundary will be arbitrarily located between the two. Each observation point will be flagged and numbered to facilitate surveying. Observation points will be placed no greater than fifty feet apart. A photographic survey will be made of each observation point.

The Freshwater Wetlands Protection Act states that only the NJDEP can officially delineate wetland boundaries in the State. The Act does allow the regulated community to propose their own wetland boundaries, but that delineation must be approved by the Department. This approval is obtained through the issuance of a Letter of Interpretation (LOI). The LOI process is simply a regulatory mechanism by which the Department certifies wetlands boundaries; however, it must be obtained prior to the development of any permit application. Using the data developed during the field activities to delineate on-site wetlands, a LURP-1 form requesting a LOI will be prepared and submitted to the NJDEP.

If necessary, McLaren/Hart will conduct a second site visit to meet with Department representatives to verify the interpretation of potential wetland boundaries. If it is determined that wetlands are present, the interpreted boundaries will be surveyed by a New Jersey certified surveyor.

Findings of the wetlands delineation will be included in the text of the report. The New Jersey approved LOI will be included as an appendices to the report. Delineated wetland boundaries will be plotted on a 1" = 250' scale map.

2.4 TASK IV - STAGE 1A CULTURAL RESOURCES SURVEY

McLaren/Hart will conduct a Stage 1A Cultural Resources Survey (CRS) to identify the presence of potentially protected historic resources at the site. McLaren/Hart will subcontract the CRS to Richard Grubb & Associates (RGA) of Cranbury, New Jersey to complete the survey. The CRS is required by Section 106 of the National Historic Preservation Act. The CRS will be performed in accordance with the guidance provided by Section 2.4 of the January 1988 CERCLA/SARA Environmental Review Manual. RGA will identify documented cultural resources on the site and vicinity, evaluate the probabilities that previously unrecorded cultural resources exist on the site, and make recommendations regarding the necessity for further investigation. Implementation of the Stage 1A survey will not involve subsurface testing.

The first part of the CRS will include a through literature and map search to provide a concise and comprehensive exposition of the prehistoric and historic development of the site and vicinity and a review of documents from the State Historic Preservation Office and the State Museum, as well as the various local, county, and state organizations, repositories, and record centers. RGA will also conduct interviews with individuals knowledgeable about the history and prehistory of the site and vicinity.

The second part of the CRS will include a general analysis of the environmental and geologic conditions of the site and vicinity together with an evaluation of the gathered documentary sources to determine the probability that prehistoric and historic cultural resources exist on the site. This will involve a visual inspection of the site to evaluate current conditions and to assess the extent to which prior activities may have disturbed areas of cultural resource sensitivity, and an evaluation of the possible impacts of any planned remedial activities on areas of the suspected cultural sensitivity.

Following completion of both investigative aspects of the CRS, RGA will prepare a report of the findings of the literature research and site investigation, assess the significance of the findings, and provide recommendations for Phase IB sampling, if necessary. McLaren/Hart will incorporate the significant results of the CRS report into the text of the Supplemental Phase II Investigation Report and include the CRS report as an appendix to the report.

2.5 TASK V - GROUNDWATER FATE AND TRANSPORT ANALYSIS

McLaren/Hart will conduct a fate and transport analysis of site-related groundwater constituents in the shallow aquifer with concentrations greater than their respective Federal and State MCLs, U.S. EPA Region III RBCs, U.S. EPA Region II Tap Water Concentrations (TWCs), or risk-based PRGs. McLaren/Hart will model the potential migration of these constituents in the shallow aquifer toward potential off-site receptors and to the uppermost drinking water aquifer by using the analytical, groundwater solute transport model known as MYGRT. This model estimates the concentrations of dissolved constituents with respect to time and distance traveled from the source based on the volume of the source, constituent concentrations, physical/chemical properties of the solute and saturated medium, and site hydrogeology. MYGRT can simulate the migration of organic and inorganic analytes through the saturated zone based on the advection-dispersion-retardation decay equation (Cleary & Ungs, 1978; van Genuchten & Alves, 1982). The MYGRT model can function as a one- or two-dimensional model.

Since groundwater flows radially away from the facility, MYGRT will be used to estimate the groundwater concentration of site-related constituents at the nearest off-site well utilizing the highest calculated site groundwater velocity. The MYGRT model will also be used in its one-dimensional mode to estimate constituent concentrations in the upper most drinking water aquifer due to vertical migration from the shallow aquifer. The estimated peak groundwater

concentrations for both modeling scenarios will be compared to respective screening criteria for each site-related constituent in groundwater. The estimated groundwater concentrations at the nearest off-site well and in the upper most drinking water aquifer will be calculated using site-specific values for the parameters (seepage velocity, dispersion coefficients, and retardation coefficients).

2.6 TASK VI - SUPPLEMENTAL PHASE II INVESTIGATION REPORT

Following the completion of the field activities, data analysis, receipt of the NJDEP-approved wetlands delineation report, and receipt of the CRS report, McLaren/Hart will prepare a draft Supplemental Phase II Site Investigation Report for submittal to the U.S. EPA for review and comment. The report will include a summary of the findings of each of the above tasks, appropriate maps, and appropriate supporting documentation. As mentioned earlier, the NJDEP-approved LOI and the Stage IA CRS will be included as attachments to the report. A final Supplemental Phase II Investigation Report will be submitted to the U.S. EPA Project Coordinator in accordance with the AOC.

The report will include, but not be limited to, the following information:

Text:

- ▶ Surface Water Drainage Analysis;
- ▶ Well Survey Activities;
- ▶ Qualitative Habitat Survey and Wetlands Delineation Activities;
- ▶ Stage 1A Cultural Resources Survey Results; and,
- ▶ Groundwater Fate and Transport Analyses.

Figures:

- ▶ Site topographic map (1:2000 scale);
- ▶ Surface water drainage feature map (1:250 scale);
- ▶ Off-site Public Supply and Private well location map (1:2000 scale);
- ▶ Wetlands location map (1:250 scale), if applicable; and,
- ▶ Cultural resource feature map (1:250 scale), if applicable.

Appendices:

- ▶ Well survey responses;
- ▶ Approved Letter of Interpretation (LOI) for the wetlands delineation;
- ▶ Cultural Resources Survey report; and,
- ▶ Fate and Transport calculations.

3.0 PROJECT SCHEDULE

McLaren/Hart anticipates that the field work for the Supplemental Phase II Investigation will be initiated within two weeks of approval of the Work Plan by the U.S. EPA. Field work for the above activities can be completed within one week of initiation. The draft report can be completed within three weeks of receipt of the NJDEP approved wetlands LOI. It is anticipated that the finalized report can be prepared within two weeks of receipt of U.S. EPA comments to the draft report.

REFERENCES

Cleary, R.W., Unga, M.J. (1978). Groundwater Pollution and Hydrology: Mathematical Models and Computer Programs. Report No. 78-WR-15, Water Resources program, Princeton University, Princeton, New Jersey, 171.

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Paul C. Rizzo Associates, May 1990, Phase I Site Investigation, Pulverizing Services Site, Moorestown, New Jersey.

U.S. EPA, October 1987, Pulverizing Services Sampling Report, by U.S. EPA TAT, TAT-02-F-04345.

U.S. EPA, February 1988, Site Analysis, Pulverizing Services Site, Moorestown, New Jersey, for the Environmental Monitoring Systems Laboratory, Las Vegas, Nevada (TS-PIC-88058).

Figures



ENVIRONMENTAL ENGINEERING CORPORATION

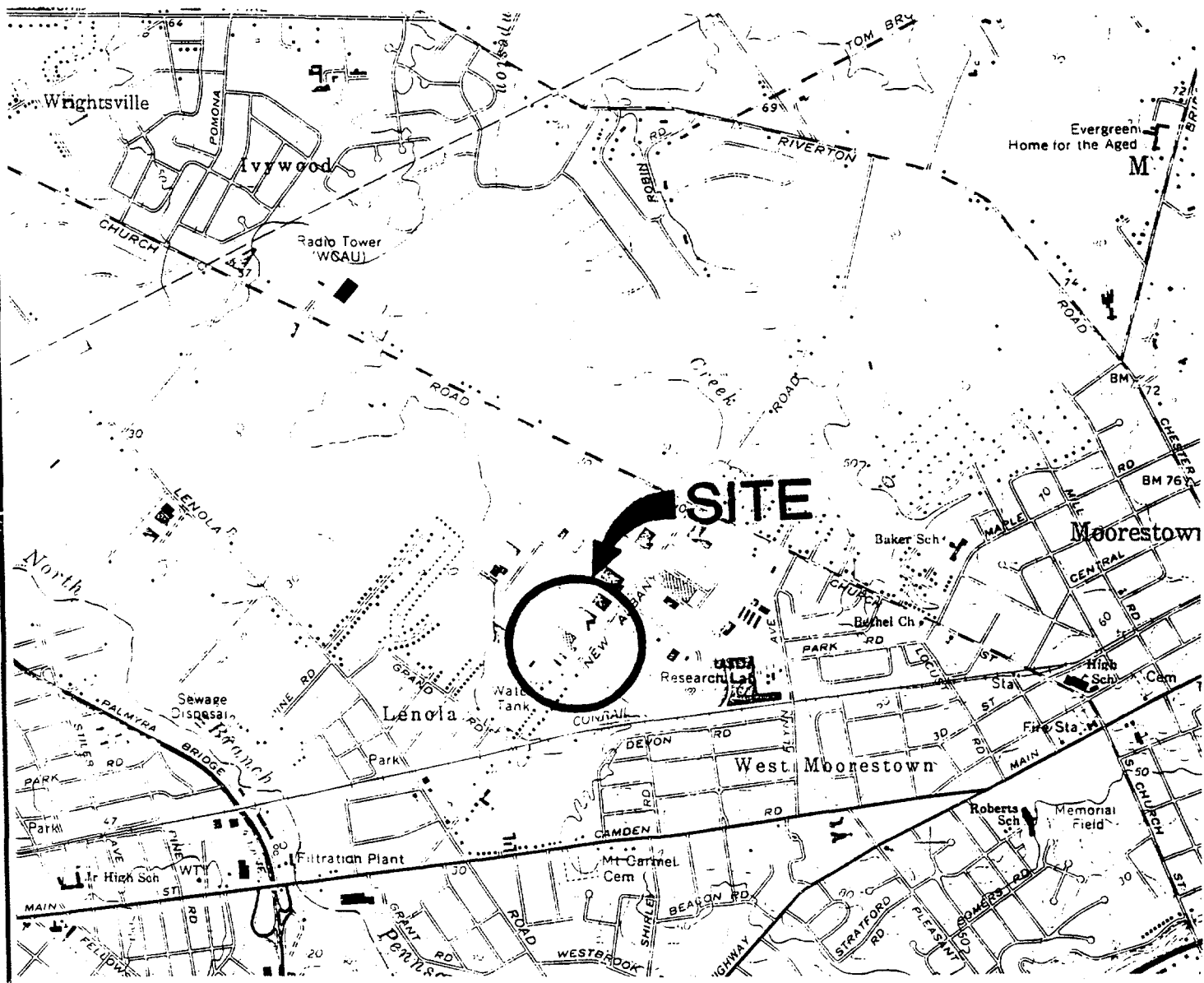
RESEARCH & DESIGN MAPS

MOORESTOWN, NJ
USQS 7.5 MIN.

1965
PHOTOREVISED 1986

NEW JERSEY

QUADRANGLE LOCATION



PHASE-II SITE INVESTIGATION REPORT

**PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY**

DRWN: PAR

CHKD: JAB

APPD:

SCALE:

AS SHOWN

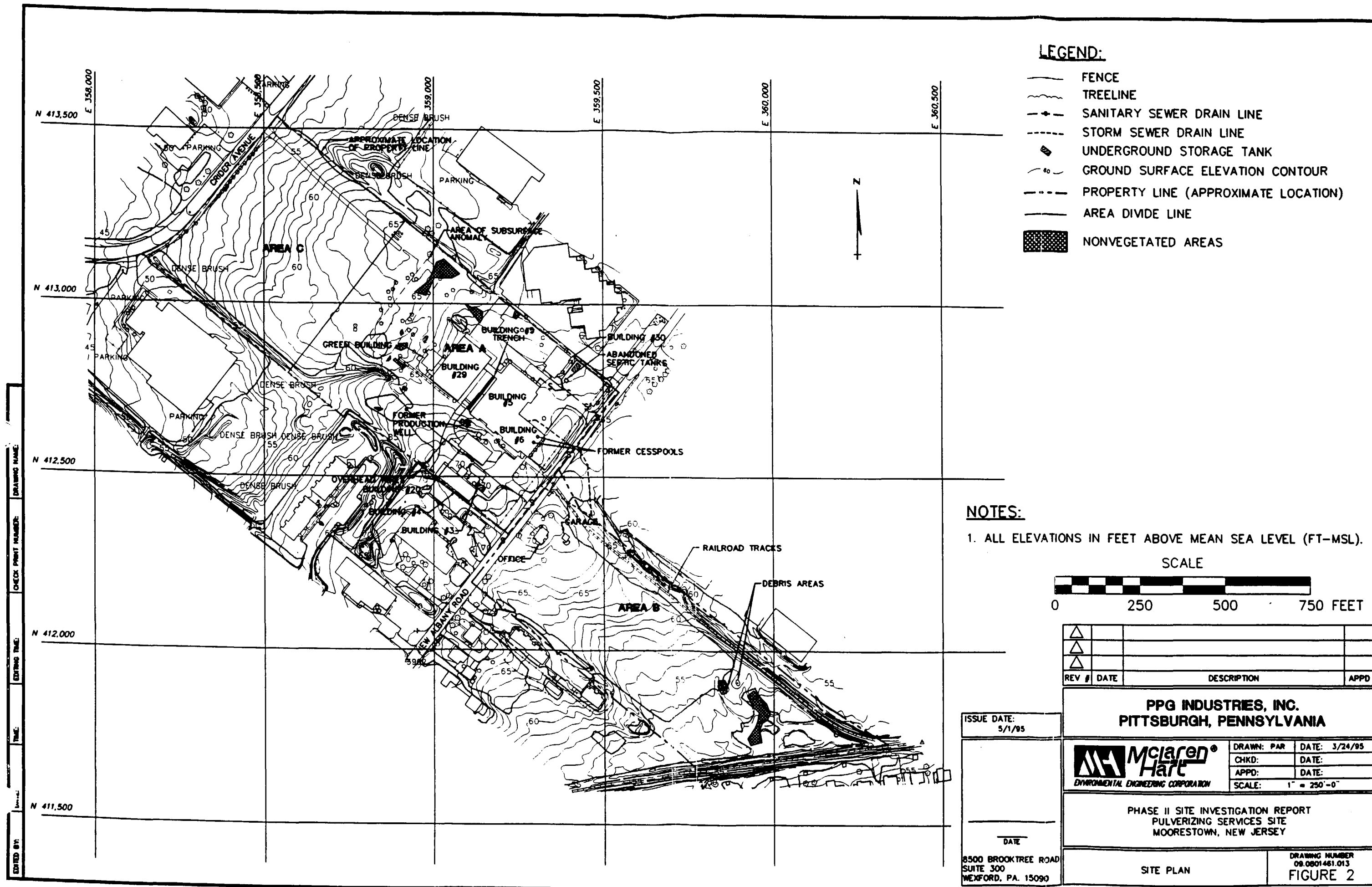
DATE: 5/1/95

SITE LOCATION MAP

DRAWING NUMBER
09-0801461

FIGURE 1

300117



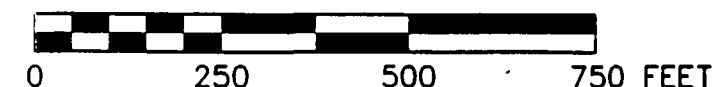
LEGEND:

- FENCE
- TREELINE
- SANITARY SEWER DRAIN LINE
- STORM SEWER DRAIN LINE
- UNDERGROUND STORAGE TANK
- GROUND SURFACE ELEVATION CONTOUR
- PROPERTY LINE (APPROXIMATE LOCATION)
- AREA DIVIDE LINE
- NONVEGETATED AREAS

NOTES:

1. ALL ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL (FT-MSL).

SCALE



REV #	DATE	DESCRIPTION	APPD
1			
2			
3			

PPG INDUSTRIES, INC.
PITTSBURGH, PENNSYLVANIA



DRAWN: PAR	DATE: 3/24/95
CHKD:	DATE:
APPD:	DATE:
SCALE:	1" = 250'-0"

PHASE II SITE INVESTIGATION REPORT
PULVERIZING SERVICES SITE
MOORESTOWN, NEW JERSEY

SITE PLAN

DRAWING NUMBER
09.0801461.013
FIGURE 2

8500 BROOKTREE ROAD
SUITE 300
WEXFORD, PA. 15090

300118

Appendix A

Health and Safety Plan and Addendum

PHASE II SITE INVESTIGATION
PPG INDUSTRIES, INC
MOORESTOWN, NEW JERSEY

SITE SAFETY AND HEALTH PLAN
ADDENDUM II

CLIENT: PPG Industries, Inc.

SITE NAME: Pulverizing Services Site

PROJECT/TASK ID#:

SITE ADDRESS: Moorestown, New Jersey

DATE: February 29, 1996

PLAN EXPIRATION DATE: June 29, 1996

SSHPP APPROVALS:

PROJECT MANAGER

Jeff Hassen

Name

Jeff Hassen
Signature

4/8/96

Date

IH REVIEW

Julie Panko

Name

Julie M Panko
Signature

4/8/96

Date

FIELD SUPERVISOR/
SITE SAFETY OFFICER

Mike Peirson

Name

Michael S. Peirson
Signature

4/8/96
Date

REGIONAL HEALTH AND
SAFETY MANAGER

Jim Less

Name

(on-file)

Signature

4/8/96

Date

This Health and Safety Plan Addendum II, dated February 29, 1996, has been read and understood by the following personnel who will be on site during the project.

[illegible]

**PPG INDUSTRIES, INC.
PULVERIZING SERVICES SITE**

HEALTH AND SAFETY PLAN

**ADDENDUM II
February 29, 1996**

INTRODUCTION

The purpose of this plan is to update the existing Health and Safety Plan (HASP) originally prepared for this site by Paul C. Rizzo and Associates. This addendum is intended to supplement, not replace the original HASP. Changes described below are the result of different site activities to be performed and clarifications made with respect to McLaren/Hart Health and Safety Policies and Procedures.

All site employees are required to read both the original plan and this addendum and sign the acknowledgement page indicating an understanding of the Health and Safety requirements for work on this site.

This addendum incorporates the following into the HASP.

DESCRIPTIONS OF ACTIVITIES

A Supplemental Phase II Site Investigation will be conducted and will consist of the following tasks:

1. Surface Water Drainage Evaluation - This task involves a site walkover and inspection of any storm water catch basins.
2. Well Survey - A location map of wells located within one-mile radius of the site will be prepared. Wells will be located by reviewing maps provided by the New Jersey Department of Environmental Protection and through research at the Moorestown Township offices. No field work is anticipated other than potential door-to-door surveys of well owners.
3. Wetlands Delineation - A wetlands delineation will be performed by McLaren/Hart. This task will involve a site walkover to assess soil, vegetation, and hydrology. Boundaries of any identified wetlands will be flagged and surveyed. A limited number of hand auger soil borings may be collected.
4. Cultural Resources Survey - A Stage 1A Cultural Resources Survey (CRS) of the site will be performed by a McLaren/Hart subcontractor. The only field work involved will be a site walkover. No physical samples will be collected for this task.

PHYSICAL HAZARDS

Table I summarizes the physical hazards that may be encountered during work on this site. Of those indicated as potential site hazards, on-site utilities and heat exposure are the most serious. Prior to any intrusive activities utility clearance must be conducted. Utility clearance information obtained during previous site work may be used. Identification of all overhead and underground utilities will minimize the potential for contact with the lines during intrusive activities.. The field work described above will likely be conducted during the spring/summer months and therefore, a potential for heat stress exists. There are four basic types of heat stress. Each type and associated symptoms include:

- HEAT RASH -** Heat rash is characterized by numerous tiny red bumps on the skin surface. It is caused by continuous contact of the skin with wet clothing, as often occurs when wearing chemical protective clothing. Heat rash can cause severe irritation if not treated and allowed to heal. Heat rash can be prevented by allowing the skin to dry.
- HEAT CRAMPS -** Heat cramps are characterized by severe cramping of the large muscle groups such as those in the legs and abdomen. Heat cramps are caused by strenuous physical work and excessive sweating which leads to loss of water and salts from the body. Heat cramps can be prevented by drinking adequate amounts of water before, during and after heavy work in hot environments. Normal salt intake during meals should be sufficient to replace lost electrolytes. **SALT TABLETS SHOULD NOT BE TAKEN.**
- HEAT EXHAUSTION -** Someone suffering from heat exhaustion will exhibit symptoms such as profuse sweating, cold/clammy skin, nausea, dizziness and fainting. A person suffering from heat exhaustion should be immediately moved to a shady area or indoors and given cool liquids to drink. Any protective clothing should be removed. Heat exhaustion is a serious condition which may lead to Heat Stroke. It should not be ignored.
- HEAT STROKE -** This is the most serious of the heat stresses and requires immediate medical attention. Heat stroke is the result of the failure of the body's cooling mechanism causing the internal body temperature to be elevated. Someone with heat stroke will have red, dry, skin; and may become incoherent. Heat stroke if left untreated will lead to coma and death. A person showing signs of heat stroke should be immediately removed from protective clothing and cooled down with cool but not ice cold water. The person **MUST** receive immediate medical attention!

All heat stresses can be prevented. All persons working in hot environments should be acclimatized (slowly get used to) to the heat by working only a few hours at a time initially in the hot conditions. Additionally, adequate amounts of water should be consumed, frequent breaks taken during the work day and refrain from alcohol consumption.

CHEMICAL HAZARDS

Previous site investigations have indicated the presence of 10 pesticides compounds detected in the surface soils. A summary of the chemical hazards is provided on Table I. Skin absorption is the major exposure pathway for the chemical contaminants at this site. Strict adherence to the PPE requirements will reduce the potential for exposure via skin absorption.

SITE ZONES/DELINEATION

Exclusion Zone:

- ___ Areas within barricades, cones and/or caution tape
- ___ Within 40-ft radius of drill rig or Geoprobe operations
- ___ Within 40-ft radius of excavation operations
- X Within 10-ft radius of hand augering location
- ___ Within 10-ft radius of groundwater monitoring well locations
- X Other (describe): Within 10 feet of storm sewer openings

Contamination Reduction Zone: At perimeter of Exclusion Zone.

Support Zone: Upwind and outside of Contamination Reduction Zone.

All personnel must utilize the buddy system, or trained escort, and check-in with the Field Supervisor.

SITE COMMUNICATION

- ☐ By two way radio
- ☒ By telephone
- ☐ By pager
- ☒ By other means (describe): verbal and hand signals as necessary.

CONFINED SPACE ENTRY

Examples of confined spaces include trenches greater than 4 feet deep, underground storage tanks, and storm sewer catch basins. The dimensions of the storm sewer catch basins are currently unknown. If, however, the dimensions qualify the item as confined space and entry is necessary, the Pittsburgh Health and Safety Manager must be contacted prior to work in the confined space. Appropriate air monitoring equipment such as an oxygen meter/explosimeter must be available on site in order to perform confined space work. All confined space entries must be made in accordance with the requirements specified in McLaren/Hart Health and Safety Policy HS 14.0 "Confined Space Entry".

PERSONAL PROTECTIVE EQUIPMENT (PPE)

The PPE required for this site work is specified on Table I. The SSO will be responsible for upgrading/downgrading PPE.

AIR MONITORING

Air monitoring will be conducted during opening of the storm sewer catch basin covers. Air monitoring in the exclusion zone is specified on Table I and is to be conducted continuously at 15 to 30 minute intervals. Air monitoring frequency may be decreased if contaminant concentrations remain steady below the action levels. All air monitoring data must be recorded on the Direct Reading Report forms included as Attachment I. Any changes in the air monitoring procedures must be documented on this form.

All direct reading instruments must be calibrated daily, or in accordance with manufacturer's instructions. All calibration data should be recorded on the Instrument Calibration Log included in Attachment I.

DECONTAMINATION PROCEDURES

The decontamination procedures for Modified Level D (D+) and Level C are outlined in Attachment II. All personnel must conduct thorough decontamination upon exiting the exclusion zone. The SSO will be responsible for verifying that proper personnel and equipment decontamination is conducted.

INCIDENT REPORTING

An incident/injury report and McLaren/Hart Health and Safety Policy 8.0 - Accident Reporting and Investigation are provided in Attachment III. This form should be filled out by the injured employee (if possible) and site supervisor for any injury sustained on site. A copy of this form must be forwarded to Julie Panko, or Russ Palchak, Corporate Director of Health and Safety within 24 hours of the incident. Pittsburgh fax number is (412) 787-7218.

All injuries, regardless of their magnitude must be reported. Additionally, any incident which does not necessarily result in an injury (underground utility rupture, equipment failure etc.) but under other circumstances could have, is considered a "near miss" should be reported.

TRAINING

All site personnel must have completed the appropriate OSHA 40-hr or 24-hr HAZWOPER training and hold current 8-hr refresher certification. Site specific training will be given to all personnel prior to work activities on site and will include a review of the this Addendum, and potential chemical and physical hazards that may be encountered. Additionally, at least two on-site personnel must have current First Aid and CPR certification.

Daily tailgate safety meetings should be conducted by the Field Supervisor or SSO and documented in the Form in Attachment I.

RECORDKEEPING

All site personnel must provide the SSO with a copy of their OSHA training certificates, and medical surveillance cards prior to work on this site. The SSO will maintain these copies on site for the duration of the project and then archive them with the project files.

EMERGENCY RESPONSE

A list of Emergency Phone numbers, along with a map to the nearest hospital must be posted in the support zone near all telephones.

TABLE I

ASSESSMENT OF NON-CHEMICAL HAZARDS

Non-Chemical Hazard	Yes	No	Task No.(s)	Non-Chemical Hazard	Yes	No	Task No.(s)
1. Electrical (overhead lines)	X		1	16. Shoring		X	
2. Electrical (underground lines)		X		17. Biologic		X	
3. Gas/Water lines		X		18. Holes/Ditches	X		ALL
4. Drilling Equipment		X		19. Steep Grades		X	
5. Excavation Equipment	X		1	20. Slippery Surfaces	X		ALL
6. Machinery		X		21. Uneven Terrain	X		ALL
7. Heat Exposure	X		ALL	22. Unstable Surfaces		X	
8. Cold Exposure		X		23. Elevated Surfaces (scaffolding)		X	
9. Oxygen Deficiency		X		24. Poor Lighting		X	
10. Confined Spaces		X		25. Vehicle Traffic		X	
11. Noise	X		1	26. Insects/vermin	X		ALL
12. Ionizing Radiation		X		27. Poisonous Plants	X		ALL
13. Non-ionizing Radiation		X		28.			
14. Fire		X		29.			
15. Explosive Atmospheres		X		30.			

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TABLE II
ASSESSMENT OF CHEMICAL HAZARDS

Task No.(s)	Chemical Name (or class)	PEL/TLV *	Other Pertinent Limits *	Potential Exposure Pathways	Acute Health Effects	Chronic Health Effects
	Arsenic	0.01/0.2 mg/m ³	None Cited	Inhalation; ingestion; skin	Eye, skin & respiratory irritation	Lung, skin & lymphatic cancer; GI & skin disorders; peripheral neuropathy
	Botran (2,6-Dichloro, 4-nitroaniline)	none	none	Inhalation; ingestion; skin	unknown	unknown
	DDE	none	none	Inhalation; ingestion; skin	unknown	unknown
	DDD	none	none	Inhalation; ingestion; skin	Similar to DDT	Similar to DDT
	DDT	1.0/1.0 mg/m ³	none	Inhalation; ingestion; skin	Paresthesia tongue, lips, face; apprehension; tremors; headache; fatigue; convulsions	Liver and kidney disorders, peripheral nervous system damage, animal carcinogen
	Dieldrin	0.25/ 0.25 mg/m ³	450 mg/m ³	Inhalation; ingestion; skin	Headache, vertigo; nausea, vomiting; fatigue; muscle twitching, convulsions	carcinogen
	Endrin Ketone	0.1 mg/m ³ (as Endrin)	2000 mg/m ³ (as Endrin)	Inhalation; ingestion; skin	Headache, dizziness, nausea, vomiting, convulsions	CNS and liver damage
	Endosulfan Sulfate	0.1 mg/m ³ (as Endosulfan)	none	Inhalation; ingestion; skin	Unknown	Unknown
	Lindane (BHC-gamma)	0.5/0.5 mg/m ³	1000 mg/m ³	Inhalation; ingestion; skin	Convulsions, vomiting, pulmonary edema, mental/motor retardation	Potential blood disorders

PEL =

OSHA Permissible Exposure Limit; represents the maximum allowable 8-hr. time weighted average (TWA) exposure concentration.

TLV =

ACGIH Threshold Limit Value; represents the maximum recommended 8-hr. TWA exposure concentration.

STEL =

OSHA Short-term Exposure Limit; represents the maximum allowable 15 minute TWA exposure concentration.

TLV-STEL =

ACGIH Short-term Exposure Limit; represents the maximum recommended 15 minute TWA exposure concentration.

C =

OSHA Ceiling Limit; represents the maximum exposure concentration above which an employee shall not be exposed during any period without respiratory protection.

IDLH =

Immediately Dangerous to Life and Health; represents the concentration at which one could be exposed for 30 minutes without experiencing escape-impaired or irreversible health effects.

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TABLE II
ASSESSMENT OF CHEMICAL HAZARDS

Task No.(s)	Chemical Name (or class)	PEL/TLV *	Other Pertinent Limits *	Potential Exposure Pathways	Acute Health Effects	Chronic Health Effects
	Quintozene (pentachloro-nitrobenzene)	none	none	Inhalation; ingestion; skin	Unknown	Unknown
	Naphthalene	10	STEL = 15 ppm IDLH = 500 PPM	Inhalation; ingestion; dermal	Eye irritation; headache; nausea; abdominal pain	Damage to liver, kidneys, and CNS; dermatitis
	2- Methyl Naphthalene	None cited	None cited	Inhalation; ingestion; dermal	Eye irritation; headache; nausea; abdominal pain	Damage to liver, kidneys, and CNS; dermatitis
	Nitrobenzene	1/1 ppm	IDLH = 200 ppm	Inhalation; ingestion; dermal	Eye irritation, anemia	Possible damage to blood system, liver & kidney
	Malathion	10/10mg/m ³	IDLH = 5000 mg/m ³	Inhalation; ingestion; dermal	Blurred vision, aching eyes, skin irritation, vomiting	Damage to liver, respiratory system, and CNS
	Sevin	5/5 mg/m ³	None cited	Inhalation; ingestion; dermal	Eye & skin irritation, blurred vision, headache, vomiting	Suspect carcinogen, mutagen & teratogen
	1,1,1 - Trichloroethane	350/350 ppm	STEL = 450 ppm C = 800 ppm	Inhalation; ingestion; dermal	Eye, skin & respiratory irritation; CNS depression	Possible liver damage, dermatitis
	1,1,2 - Trichloroethane	10/10 ppm	None cited	Inhalation; ingestion; dermal	Eye, skin & respiratory irritation; CNS depression	Possible liver & kidney damage; dermatitis; suspected human carcinogen
	1,2,4 - Trichlorobenzene	TLV-C = 5ppm	None cited	Inhalation; ingestion; dermal	Eye & upper respiratory irritation, headache	Possible liver and kidney damage

PEL =

TLV =
STEL =
TLV-STEL =
C =
IDLH =

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OSHA Short-term Exposure Limit; represents the maximum allowable 15 minute TWA exposure concentration.

ACGIH Short-term Exposure Limit; represents the maximum recommended 15 minute TWA exposure concentration.

OSHA Ceiling Limit; represents the maximum exposure concentration above which an employee shall not be exposed during any period without respiratory protection.

Immediately Dangerous to Life and Health; represents the concentration at which one could be exposed for 30 minutes without experiencing escape-impairing or irreversible health effects.

OSHA Permissible Exposure Limit; represents the maximum allowable 8-hr. time weighted average (TWA) exposure concentration.

TABLE II

ASSESSMENT OF CHEMICAL HAZARDS

Task No.(s)	Chemical Name (or class)	PEL/TLV *	Other Pertinent Limits *	Potential Exposure Pathways	Acute Health Effects	Chronic Health Effects
	Tetrachloroethane	25/50 ppm	C = 300 ppm TLV-STEL = 200 ppm	Inhalation; ingestion; dermal	Eye, skin & respiratory irritation; CNS depression; skin burns	Liver damage; peripheral neuropathy; suspected human carcinogen
	Phenol	5/5 ppm	IDLH = 250 ppm	Inhalation; ingestion; dermal	Eye, nose & throat irritation; weak muscle ache	Damage to kidney & liver; dermatitis
	1,1 - Dichloroethene	1/5 ppm	TLV-STEL = 20 ppm	Inhalation; ingestion; dermal	Eye, skin & respiratory irritation; CNS depression	Possible liver & kidney damage; suspected human carcinogen
	Methylene Chloride	100/50 ppm	STEL = 1000 ppm	Inhalation; ingestion; dermal	Eye, skin & respiratory irritation; CNS depression	Possible liver & kidney damage suspected human carcinogen
	4 - Methyl 2 - Pentanone	25/25 ppm	None cited	Inhalation; ingestion; dermal	Eye, skin & respiratory irritation, CNS depression	None cited
	Ethyl Benzene	100/100 ppm	STEL = 125 ppm	Inhalation; ingestion; dermal	Eye, skin & respiratory irritation; CNS depression	Dermatitis
	Xylenes	100/100 ppm	STEL = 150 ppm IDLH = 1000 ppm	Inhalation; ingestion; dermal	Eye, nose & throat irritation; dizziness; nausea, vomiting; staggering gait	Damage to liver, kidneys and blood forming system; dermatitis
	Chlorobenzene	75/10 ppm	None cited	Inhalation; ingestion; dermal	Eye, skin & respiratory irritation; CNS depression; skin burns	Possible liver, kidney and lung damage; dermatitis

PEL =

TLV =
STEL =
TLV-STEL =
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TABLE II

ASSESSMENT OF CHEMICAL HAZARDS

Task No.(s)	Chemical Name (or class)	PEL/TLV *	Other Pertinent Limits *	Potential Exposure Pathways	Acute Health Effects	Chronic Health Effects
	Acetone	750/750 ppm	STEL = 1000 ppm C = 30 ppm	Inhalation; ingestion; dermal	Eye, skin & respiratory irritation; CNS depression	Dermatitis
	Carbon Disulfide	4/10 ppm	STEL = 12 ppm C = 30 ppm	Inhalation; ingestion; dermal	Eye, skin & respiratory irritation; CNS & peripheral nervous system depression	Possible liver, kidney & cardiovascular injury; peripheral neuropathy
	Benzene	1/10 ppm	STEL = 5 ppm TLV-STEL = 0.3 ppm	Inhalation; ingestion; dermal	Eye, skin & respiratory irritation; CNS depression	Leukemia; dermatitis
	Diethyl phthalate	TLV = 5 mg/m ³	TLV-STEL = 20 mg/m ³	Inhalation; dermal	Slight eye & skin irritation	None cited

PEL -

TLV -
STEL -
TLV-STEL -
C -
IDLH -

ACGIH Threshold Limit Value; represents the maximum recommended 8-hr. TWA exposure concentration.

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Immediately Dangerous to Life and Health; represents the concentration at which one could be exposed for 30 minutes without experiencing escape-impairing or irreversible health effects.

OSHA Permissible Exposure Limit; represents the maximum allowable 8-hr. time weighted average (TWA) exposure concentration.

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TABLE III

PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIREMENTS

Task No.(s)	Initial Level of Protection	Level if Upgrade	Air Monitoring Equipment	Monitoring Protocol	Monitored Level for PPE Upgrade *	Monitored Level For Mandatory Work Stoppage **	Additional PPE* for Upgrade
1	D, (D+ if entering catch basins)	C	PID (11.7 ev bulb)	Monitor breathing zone every 30 minutes. Frequency can be decreased if contaminant concentrations remain steady below the action levels	> 5 ppm total VOCs	250 ppm total VOCs	Full face APR with OV/HEPA cartridges
2-4	D	N/A	N/A	None	N/A	N/A	N/A

N/A = Not applicable

* Monitoring performed in worker's breathing zone.

** Call Pittsburgh Health and Safety Manager or Regional Health and Safety Manager for consultation.

*** Upgrading/downgrading of PPE is the responsibility of the SSO. No one else is permitted to make this decision unless specifically authorized by the SSO or Pittsburgh Health and Safety Manager.

LEVELS OF PROTECTION:

Level D+: Hard Hats, Steel Toe PVC boots, safety glasses, latex inner gloves, neoprene outer gloves, saranex coveralls.

Level C: Level D+ and air purifying respirator with combination organic vapor (OV) and high efficiency particulate air filters (HEPA) cartridges

TO BE POSTED

TITLE	NAME	TELEPHONE NUMBER
Police Department	<u>Police</u>	<u>(609) 235-0130</u>
Fire Department	<u>Fire</u>	<u>(609) 234-1111</u>
Local Hospital	<u>Memorial Hospital</u>	<u>(609) 267-0700</u>
Local Ambulance/Rescue	<u>Paramedics</u>	<u>(609) 234-1111</u>
Pittsburgh Health & Safety Manager	<u>Julie Panko</u>	<u>(412) 934-3744</u> <u>(412) 833-7833 (home)</u>
Central Region Health and Safety Manager	<u>Jim Less</u>	<u>(810)358-0400</u> <u>(419) 536-7614 (home)</u>
Client Contact	<u>Tom Ebbert</u>	<u>(412) 492-5478</u>
Site Contact	<u>N/A</u>	<u>N/A</u>
Project Manager	<u>Jeff Hassen</u>	<u>(412) 934-3744</u> <u>(412) 772-4649 - home</u>
Site Safety Officer	<u>Mike Peirson</u>	<u>N/A</u>
Subcontractor Contact		

6.4 HOSPITAL NAME/ADDRESS/ROUTE

Name: Memorial Hospital

Address: 175 Madison Avenue, Moorestown, NJ 08060

Route: TO BE DETERMINED
